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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,925

02/25/2005

Masatomo Kurata

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EXAMINER

SNYDER, ADAM J

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

03/21/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,925	Applicant(s) KURATA, MASATOMO	
	Examiner Adam J. Snyder	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :02/25/2005, 03/20/2006, 08/29/2006, and 12/11/2006 .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

3. Figure 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2629

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by Rallison et al (US 5,991,085).

Claim 1, Rallison (Fig. 17A-17D, 25C, and 26) discloses a head-tracking method (Col. 4, Lines 45-67; Col. 5, Lines 1-19) in which the three-dimensional direction the head faces is detected by three axes of a yaw angle that is an angle turning around an erect axis erected on the horizontal surface of the head (562), and a pitch angle (562a) and a roll angle (562b) that are angles formed by said erect axis and two axes perpendicular thereto, wherein

said yaw angle is judged from the integral value of the output of a gyro sensor (562; Col. 5, Lines 1-19), and

said pitch angle (562a) and said roll angle (562b) are calculated from the output of a tilt sensor (662) which detects the inclination of a plane that intersects the direction of said erect axis at right angles (Col. 20, Lines 59-67).

Claim 4, Rallison (Fig. 17A-17D, 25C, and 26) discloses a head-tracking device (Col. 4, Lines 45-67; Col. 5, Lines 1-19) in which the three-dimensional direction the head faces is detected by three axes of a yaw angle that is an angle turning around an erect axis erected on the horizontal surface of the head (562), and a pitch angle (562a)

and a roll angle (562b) that are angles formed by said erect axis and two axes perpendicular thereto, comprising:

a gyro sensor (562) for detecting said yaw angle (Col. 5, Lines 1-19),
a tilt sensor (662) which detects the inclination of a plane that intersects the direction of said erect axis at right angles (Col. 20, Lines 59-67), and
calculation means (e.g. accumulation differential amplifier 674, accumulator) to judge the yaw angle from the integral value of the output of said gyro sensor (Fig. 23), and to calculate said pitch angle (562a) and said roll angle (562b) from the angular velocity output of said tilt sensor (662; Col. 24, Lines 32-64).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 2, 3, 5, and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rallison et al (US 5,991,085) in view of Foxlin (US 5,645,077).

Claims 2 and 5, Rallison discloses a head-tracking method/device according to claim 1.

Rallison does not expressly disclose wherein a period to judge the yaw angle from the output of a gyro sensor is shorter than the period to calculate the pitch angle and the roll angle from the output of said tilt sensor.

Foxlin (Fig. 1) discloses wherein a period to judge the yaw angle (104) from the output of a gyro sensor (Col. 6, Lines 41-49) is shorter than the period to calculate the pitch angle and the roll angle from the output of said tilt sensor (110; Col. 6, Lines 50-58).

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Rallison's head-tracking method/device by applying a drift compensation, as taught by Foxlin, so to use a head-tracking method/device with a drift compensation for track the angular orientation of the head (or other body member) with undiminished performance over an unlimited range or working volume (Col. 3, Lines 25-51).

Claims 3 and 6, Foxlin (Fig. 1) discloses wherein the yaw angle (104) judged from the output of the gyro sensor (Col. 6, Lines 41-49) is corrected (108) using the judged pitch angle and roll angle (110; Col. 6, Lines 50-58).

Conclusion

Prior Art Foxlin (US 5,807,284; US 6,162,191; US 6,361,507) are cited to teach further head tracking methods to compensate for drift.

Prior Art Rallison et al (US 6,369,952 B1) is cited to teach further head tracking devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam J. Snyder whose telephone number is (571) 270-3460. The examiner can normally be reached on M-F (8:30am-5pm) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AJS/
Examiner, Art Unit 2629
03/13/2008

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/Chanh Nguyen/

Supervisory Patent Examiner, Art Unit 2629